Image Guided Intracardiac Beating Heart Surgery
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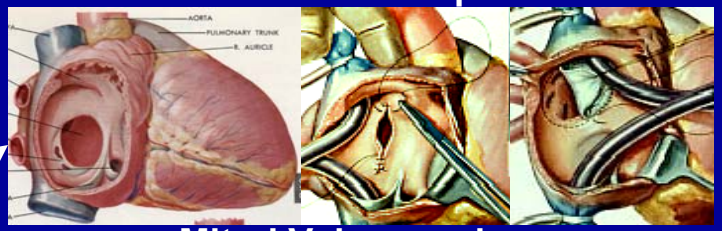
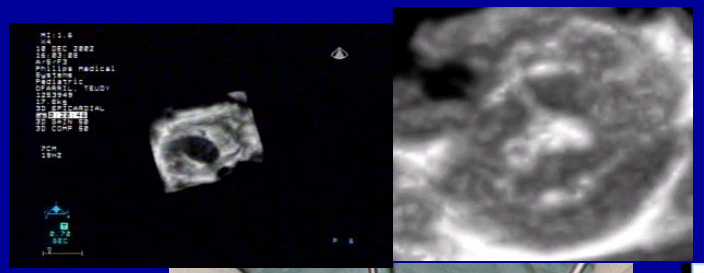
AIM: adapt real time 3-D ultrasound imaging specifically for image-guided interventions and integrate this technology with instrument tracking, tactile sensing, and acoustic tissue analysis to permit safe and accurate intracardiac beating heart surgery.

Model Surgical Procedures

Closure of Atrial Septal defect

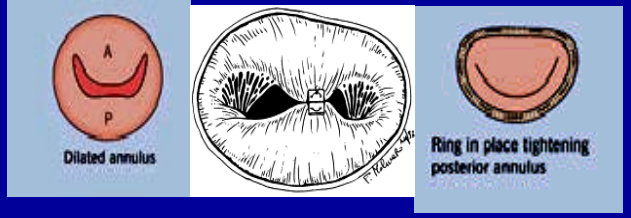


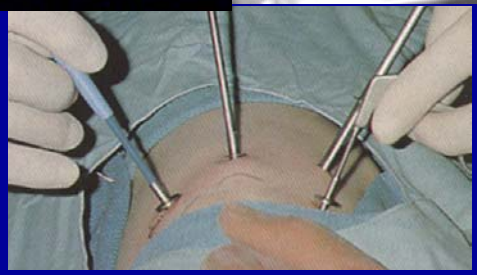


ASD clip.wmv

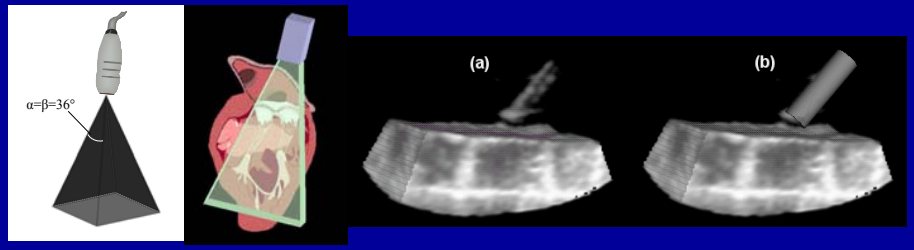
MV cleft.wm

Mitral Valve repair



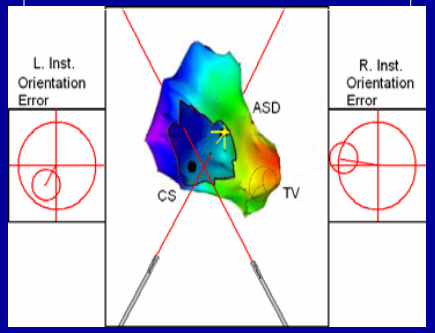


Real time 3D US modification
Image processing
Instrument surface modification



Instrument development

Instrument tracking



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In vitro and In vivo testing
Instrument development
Procedure development

Harvard, DEAS
Robert Howe PhD
Image processing
Tissue analysis
Surgical robotics
Haptics

Image Guided Surgery Partnership

Boston U., Mech. Eng.
Pierre Dupont PhD,
Robin Cleveland PhD
Instrument EM tracking
Image integration and displays
Instrument surface modification

Philips Medical Systems
Ivan Salgo MD
Bernard Savord MS
Ultrasound Probe modification
Data streaming board
(offline processing)
Image processing
Software modifications